PROBIOTICS, PREBIOTICS, AND KEFIR | DoD CFD

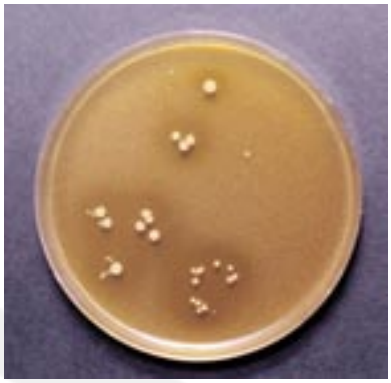
The DoD Combat Feeding Directorate is investigating three areas related to enhanced intestinal health of the Warfighter: probiotics, prebiotics, and kefir. Commercially available items that address this need/concern do not meet current military shelf life requirements.

WHY IS IT NEEDED?

Food-borne disease outbreaks are a considerable threat to the Warfighter in countries where sanitation conditions are substandard and have a significant negative impact on overall troop performance and readiness.

- Since 2001, 3.6 million instances of intestinal illness have been reported in deployed troops, resulting in 11 million days during which Warfighters were incapacitated.
- In a survey of mid-deployment troops in Iraq and Afghanistan, 76% reported at least one episode of diarrhea, and more than half reported multiple episodes. Of these respondents, 45% reported that the illness resulted in decreased job performance, with a median loss of 3 days.
- The cost of these intestinal illnesses has reached $113 million for treatment and lost productivity.

Presently, there are no guaranteed procedures available to prevent Warfighter exposure to diarrhea causing organisms. Therefore, it is important to look at ways to decrease the incidence and severity by increasing intestinal resilience.



L. reuteri (a probiotic) inhibiting growth of *S. aureus*

KEY FEATURES/BENEFITS:

Probiotics are "good bacteria" that have been shown to decrease the incidence and severity of travelers' diarrhea and produce immune enhancing substances in the gut. The current research focus is to increase the survival of probiotics within food systems that meet military shelf life requirements, thereby increasing the intestinal and overall health of the Warfighter.

Prebiotics are essentially food for the bacteria in the gut. These carbohydrates have been shown to preferentially increase "good bacteria". Incorporation of prebiotics into ration components is an alternative strategy for increasing the intestinal and overall health of the Warfighter.

Kefir granules are natural mother cultures used to make kefir, a fermented dairy drink associated with longevity and intestinal health. Kefir granules consist of probiotic bacteria and yeast encapsulated in a polysaccharide matrix. The granules are remarkably stable for years if preserved and stored properly. Ongoing research seeks to exploit this property by using kefir granules as probiotic delivery vehicles for incorporation into ration components that will meet military shelf life requirements.

POINT OF CONTACT:

Combat Feeding
Phone: COMM (508) 233-4670, DSN 256-4670
E-Mail: nati-amsrd-nsc-ad-b@conus.army.mil